

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**PHARM.D YEAR-3 EXAMINATION – WINTER - 2024**

**Subject Code: 838802****Date: 04-12-2024****Subject Name: Pharmaceutical Analysis****Time: 02 : 30 PM TO 5 : 30 PM****Total Marks: 70****Instructions:**

- 1. Attempt any five questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**

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|-------------|---|-----------|
| <b>Q.1</b>  | (a) Explain theory and principle of NMR spectroscopy.   | <b>06</b> |
|             | (b) Explain application of x-ray diffraction study.   | <b>04</b> |
|             | (c) Enlist different mass analyzers and discuss quadrupole mass analyzer.   | <b>04</b> |
| <b>Q.2</b>  | (a) Derive Beer-Lambert's law and explain various types of deviations from Beers Lambert's law.                               | <b>06</b> |
|             | (b) Explain the effect of vibrational coupling, H-bonding and electronic factors on vibrational frequency in IR spectroscopy. | <b>04</b> |
|             | (c) Write the difference between AAS and AES.   | <b>04</b> |
| <b>Q.3</b>  | (a) Explain instrumentation of polarimetry.   | <b>06</b> |
|             | (b) Write principle and instrumentation of HPTLC.   | <b>04</b> |
|             | (c) What is GLP? Explain it in detail.  | <b>04</b> |
| <b>Q.4</b>  | (a) Draw a labeled diagram of spectrofluorimeter and explain instrumentation of fluorimetry.                                  | <b>06</b> |
|             | (b) Write a note on Ion exchange chromatography.  | <b>04</b> |
|             | (c) Define: chemical shift, base ion, wavelength, wave number, fluorescence.  | <b>04</b> |
| <b>Q.5</b>  | (a) Explain instrumentation and application of Gas chromatography.  | <b>06</b> |
|             | (b) Write a short note on DSC.  | <b>04</b> |
|             | (c) Explain different types of nebulizer burner system in flame photometry.   | <b>04</b> |
| <b>Q. 6</b> | (a) Write a note on ion exchange and size exclusion Chromatography.   | <b>06</b> |
|             | (b) Enlist detectors used in IR spectroscopy and explain any one in detail.   | <b>04</b> |
|             | (c) Give the principle, techniques, $R_f$ value and application of TLC.   | <b>04</b> |
| <b>Q.7</b>  | (a) Write a note on DME.  | <b>06</b> |
|             | (b) Enlist types of paper chromatography and explain in details.  | <b>04</b> |
|             | (c) What are the elements, requirements and interpretation of ISO 9000.   | <b>04</b> |

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